Brunel UNIVERSITY WEST LONDON

MJM MUSCULOSKELETAL JOINT MODELLER

SCHOOL OF ENGINEERING AND DESIGN

Final programme

International Conference & Course on Orthopaedic Biomechanics, Clinical Applications & Surgery

6 - 9 June 2010

OBCAS

Workshops and Company Demonstrations

Conference Tracks and Topics (Abstract Proceedings)
Keynote Lecture
Plenary Lectures – P
Biomechanics – B
Surgery and Implants – S
Material and Tissue – M
Devices and Robotics – D

Course Tracks and Topics (Lectures) – L
Upper Limb
Lower Limb
Spine

DJO Aspen MEDICAL PRODUCTS codamotion Exactech simpleware Boehringer Ingelheim

ELSEVIER

European Society of Biomechanics

Prof. Edmund Y. S. Chao

Edmund Y. S. Chao received his BS degree in Agricultural Engineering from the National Taiwan University in 1960 and the MS degree in Agricultural Engineering with a minor in Mechanical Engineering from the Virginia Polytechnic Institute in 1964. After that, he worked as a senior engineer at the Research and Technical Center of Deere & Company in Moline, Illinois from 1964-1968. He then entered the University of Iowa and pursued his PhD in Applied Mechanics from 1968-1971. He remained there as an Assistant Professor in the Department of Mechanics and Hydraulics for one year and moved to the Mayo Clinic and created its first Biomechanics Laboratory while serving as a Consultant in Orthopaedics and Professor of Bioengineering from 1972-1992. In 1993, he joined the Johns Hopkins University as a Professor of Orthopaedic Surgery and started a new biomechanics research program and has been the Vice Chair of Research in the Department. He also holds adjunct appointments in the Departments of Biomedical Engineering and Mechanical Engineering at Hopkins. His primary interest is to develop virtual human musculoskeletal simulation models for dynamic analysis of their internal forces, joint pressure distribution, ligament tension, and the state of stress and strain in the bone in response to activities. He has also worked in the fields of bone fracture and/or defect repair augmentation, and the reconstruction of segmental bone and joint defects after resection of bone tumor or in joint replacement revision surgery with massive bone defect. He has trained many physicians, scientists and engineers to utilize the knowledge of biomechanics and biomaterials to enrich their teaching, medical practice and research career. He was able to apply engineering principles and technologies to benefit several other medical and dental subspecialties in their teaching, research and patient care. He serves as a role model for those with an engineering education and training who wish to pursue a rewarding career in a clinical department and being accepted as a colleague by his medical peers.

Mr. Richard Field

Richard Field qualified from the Westminster Hospital in 1980. He undertook his PhD thesis at Cambridge University on the design and pre-clinical evaluation of a Proximal Femoral Epiphyseal Replacement for bone conserving hip replacement. He completed his Specialist Orthopaedic training in London, Cambridge and Melbourne. He currently works as a Consultant Orthopaedic Surgeon with the Epsom & St Helier University Hospitals NHS Trust, as the Director of Research for the South West London Elective Orthopaedic Centre (the EOC) and as an Honorary Senior Lecturer at St George's. His current clinical interests are in arthroscopic and joint preserving hip surgery as well as bone conserving, primary and revision hip replacement. Mr Field has designed a tri-tapered, canulated femoral stem and is the co-designer of the Proximal Epiphyseal Replacement femoral component, the Cambridge cup, the Mitch PCR cups and a short stem femoral component.

Prof. Antonio Moroni

Born in Bologna on 29/10/1954, Prof. Moroni graduated in Medicine and Surgery with Honours at the University of Bologna. In 1986, he became Junior Houseman at the Orthopaedic Clinic of the University of Bologna, Rizzoli Orthopaedic Institute, and Senior Houseman in 1990. Since 2001, he has been Associate Professor of Orthopaedic Surgery at the University of Bologna and teaches Degree Courses in Medicine and Surgery. He also teaches the Orthopaedic and Physiotherapy Resident Programs at the University of Bologna. In January 2007 he obtained the qualification of Full Professor of Orthopaedic Surgery and since November 2007 he has been the Director of the School of Physiotherapy and Rehabilitation at the University of Bologna. He is specialised in hip arthroplasty, both primary and revision cases, and in particular, in hip resurfacing. He has performed more than 1000 hip resurfacing operations, a surgical technique which preserves the femoral head, offering faster and better rehabilitation compared to traditional prostheses. It allows patients to rapidly resume normal functional activity, including the possibility to practice sporting activities. He developed a new surgical technique consisting of femoral head lengthening using an impaction bone grafting technique, thus broadening the indications for hip resurfacing. His series of hip resurfacings, and the results, have been presented at some of the most prestigious International meetings. He is currently involved in new bearing concepts for hip arthroplasty, including the use of polycarbonate-urethane, a material which mimics the mechanical properties of human cartilage.

CONFERENCE CHAIRS

Prof. Ibrahim Esat

Ibrahim Esat graduated from Queen Mary College of London University with BSc Honors and in the same university studied his Phd degree, in 1978 joining Newcastle University as a postdoctoral fellow. In 1980 he became the head of the Mechanical Engineering Department of newly formed the Eastern Mediterranean University in Cyprus but two years later returning to the UK and joining the University College of University of London as a research fellow. Following this, in 1982 he joined the Dunlop Technology Division, the research centre of the Dunlop empire as a Principal Engineer heading pioneering research in CAD/CAM developing in-house surface modelers and FEA for hypereleastic material. In 1984 he returned to Queen Mary College as a lecturer and since 1994, he has been at Brunel University, first as a reader and then as a full professor. Prof. Esat's research expertise extends from modeling, design and optimization of mechanical systems, material characterization and modeling of materials, particularly rubber and visco-elastic materials and the use of biologically inspired algorithms and computing in engineering problems. Over the last 20 years he graduated more then 40 PhD students and published more than 250 refereed technical papers. He is the sole author of a number of dynamic and vibration modeling software used in industry. He is currently the head of the Applied Mechanics research group with over 20 staff and more than 30 researchers and currently 6 visitors and Co-Director of Brunel Orthopeadic Research and Learning Centre. His current research is in bioengineering, especially in musculoskeletal joint modelling, biologically inspired computing and optimal vibration control. He is the recipient of many international awards from ASME (American society of Mechanical Engineers), the SDPS (Society of Design and Process Science) had given many invited talks and chaired or co chaired many major international conferences. He is recently being elected to be the next president of the SDPS

Dr. Neriman Ozada

Neriman Ozada was born in Nicosia, Cyprus and had her early schooling all in the island. In 1999 she won the prestigious TUBITAK (The Scientific and Technological Research Council of Turkey) award for the highest grade in physics. Dr. Ozada graduated from the Eastern Mediterranean University of Cyprus in Mechanical Engineering in 2005. The same year she joined the Brunel University to study her PhD in musculoskeletal joint modelling. During her research she had developed the concept of joint invariants which have the potential of redefining concepts such as joint laxity. Again during her PhD study she developed the MJM, sophisticated joint modelling software. She graduated in July 2009 and her PhD thesis was awarded the VC prize for one of the best doctoral research in the university. During her research in Brunel, she co-organised a number of very successful international conferences in upper limb arthroplasty and orthopaedic biomechanics. She is continuing to work on musculoskeletal joint modeller software with the emphasis to improve its efficiency and the GUI. She is also in the process of writing a book on basic biomechanics which will include software for facilitating experimentation with joint biomechanics.

Prof. Jian S. Dai

Professor Dai is Chair of Mechanisms and Robotics and Head of Centre for Mechatronics and Manufacturing Systems (CMMS). Working in the field of mechanisms and robotics in past 25 years, he is an international leading figure in mechanisms and robotic end-effectors and a pioneer in reconfigurable mechanisms and has published over 250 peer-reviewed papers and holds five patents. He serves as Associate Editor of IEEE Transactions on Roboti <http://www.ieee-ras.org/tro> cs, Associate Editor of ASME Transactions: Journal of Mechanisms and Robotics <http://journaltool.asme.org/Content/Masthead23.cfm> and Associate Editor of international journal Robotica <http://journals.cambridge.org/action/displayJournal?jid=ROB> . He was recipient of ASME biennial mechanisms conference best paper award in 1998 on metamorphic mechanisms and recipient of the 2009 PE publishing best journal paper award. Prof. Jian S Dai has a wide range of interests in screw theory, line geometry, metamorphic mechanisms, reconfigurable mechanisms, grasping theory, multi-fingered robotic hand, rehabilitation robotics, surgical robotics and automated assembly and packaging systems. He has patents on metamorphic robotic hand and linear actuator and rehabilitation robots. Pioneering in reconfigurable mechanisms, he organized the first ASME/IFToMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR 2009), the IMechE robotic surgery symposium and the special issue on surgical robotics in journal Robotica.

Prof. Noam Eliaz

Noam Eliaz is an Associate Professor at Tel-Aviv University, Israel, where he currently serves as the first Head of the multi-faculty Materials and Nanotechnologies Program. He received his B.Sc. and Ph.D. (direct track) in Materials Engineering, both cum laude, from Ben-Gurion University. After receiving his B.Sc., he worked for three years in the Department of Materials and Failure Analysis at the Israel Air Force. After completing his doctorate, he became the first ever materials scientist to receive, simultaneously, a Fulbright postdoctoral award and a Rothschild postdoctoral fellowship. He then worked for two years in the H.H. Uhlig Corrosion Laboratory at M.I.T. In August 2001 he joined Tel-Aviv University as a Faculty member and founded The Biomaterials and Corrosion Laboratory, which has become the largest lab of its kind in Israel. He currently serves as a Chief Editor of the journal Corrosion Reviews (jointly with Ron Latanision) and as a chairman of the Central Committee for Chemistry Standards at the Standards Institution of Israel. He has contributed approximately 200 publications in refereed journals, books and scientific conferences, and is currently editing three books for Springer, one of them on Degradation of Implant Materials. His publications are widely cited, and he has garnered numerous accolades, including the T.P. Hoar Award for the best paper published in Corrosion Science during 2001, and the prestigious 2010 Herbert H. Uhlig Educator Award.

Prof. Ofer Levy

Ofer Levy studied medicine at the Hebrew University and Hadassah School of Medicine, Jerusalem, from 1976 - 1982. After completion of his military service he continued his general surgical training at Kaplan Medical Centre in Rehovot, Israel. He then moved to Sheba Medical Centre, Tel Hashomer, for his higher surgical orthopaedic training. In 1992 he was appointed instructor of Orthopaedic Surgery at The Sackler School of Medicine, Tel Aviv University, where his work included significant research into both clinical and basic sciences. In 1995 he was appointed Consultant Orthopaedic Surgeon and Chief of the Shoulder Surgery Service at Soroka Medical Centre in Beer Sheva, Israel, and lecturer in Orthopaedic Surgery at the Faculty of Health Science at the Ben-Gurion University of the Negev, Beer Sheva. Since 1997 he has been working with Stephen Copeland in Reading, UK. In 1998, he was appointed Consultant Orthopaedic Surgeon at the Royal Berkshire Hospital and both established the Reading Shoulder Unit. Ofer Levy leads the Reading Shoulder Unit, Professor & Chair of the Orthopaedic Research and Learning Centre in the School of Engineering and Design, Brunel University, West London. Research Interests: biomechanics & kinematics, surgical anatomy, surgical technologies, arthroscopic and minimal invasive surgery, total joint replacement (shoulders), muscloskeletal infections, development of virtual reality arthroscopic simulators. Assistant editor, Journal of Shoulder and Elbow Surgery. Reviewer for journals. Special External Examiner at Masters Degree level, The National University of Ireland and the Royal College of Surgeons in Ireland. Was awarded National Bronze clinical excellence award in 2006. He is a founder member of the Israeli Shoulder and Elbow Society, a member of the European Society of Shoulder and Elbow Surgery and the British Elbow and Shoulder Society (BESS) and Corresponding member of the American Shoulder and Elbow Society. He has published many scientific papers, written chapters to books on Shoulder Surgery and invited to lecture worldwide.

Prof. Sean Hughes

Emeritus Professor of Orthopaedic Surgery, Imperial College London and Honorary Consultant Orthopaedic Surgeon Imperial College Healthcare Trust. Sean Hughes trained at the The Middlesex hospital and the Royal National Orthopaedic Hospital London. Research Fellow at Mayo Clinic USA. Professor of Orthopaedic Surgery University of Edinburgh from 1979 to 1991 returning to a foundation chair in Orthopaedic Surgery at the Royal Postgraduate Medical School and subsequently Professor of Orthopaedic Surgery Imperial College London until 2006. Medical Director Ravenscourt Park Hospital and Head of Surgery and Anaesthetics Imperial College London.

Past Vice president Royal College of Surgeons Edinburgh and Chairman of intercollegiate Board in Orthopaedic Surgery.

Practised in spinal surgery and published 13 books and 32 chapters along with over 250 articles in scientific journals on subjects related to spinal surgery; pathogenesis of disc disease and musculoskeletal infections.

Current research interests include stem cells research in fracture healing and disc reconstruction.

FACULTY

Conference Chairs

Edmund YS Chao Johns Hopkins University, USA

Richard Field The South West London Elective Orthopaedic Centre, UK

Antonio Moroni Rizzoli Orthopaedic Institute, Italy

Ibrahim Esat Brunel University, UK

Neriman Ozada Brunel University, UK

Noam Eliaz Tel Aviv University, Israel

Ofer Levy Brunel University & Reading Shoulder Unit, UK

Jian S. Dai King`s College London, UK

Sean P. Hughes Imperial College London, UK

Keynote Speaker

Edmund YS Chao Johns Hopkins University, USA

Plenary Speakers

Antonio Moroni Rizzoli Orthopaedic Institute, Italy, **Noam Eliaz** Tel Aviv University, Israel, **Richard Field** South West London Elective Orthopaedic Centre, UK, **Ofer Levy** Brunel University & Reading Shoulder Unit, UK, **Mike Kimmons** CEO British Orthopaedic Association, UK, **Chunfeng Zhao** Mayo Clinic, USA, **Peter Walker** New York University, USA, **Oliver Marin-Pena** Hospital Infanta **Leonor, Spain**, **Stephen Copeland** Reading Shoulder Unit, UK, **Tom Joyce** Newcastle University, UK, **John Leicester Williams** University of Memphis, USA, **Oussama Khatib** Stanford University, USA, **Sean P. Hughes** Imperial College London, UK, **Allen Goodship** University College London, UK, **Can A. Yucesoy** Bogazici University, Turkey, **Andrzej Zielinski** Gdansk University of Technology, Poland, **Lennard Funk** Salford University, UK, **Ajeya Adhikari** The South West London Elective Orthopaedic Centre, UK, **Sanjukta Deb** King`s College London, UK, **Daniel Kluess** University of Rostock, Germany, **Cengiz Kaya** Yildiz Technical University, Turkey, **Ehud Rath** Ben Gurion University of the Negev, Israel, **Nicola Maffulli** Queen Mary University of London, UK, **Sylwia Sobieszczyk** Gdansk University of Technology, Poland, **Ramon Torrecillas** Fundación ITMA Parque Tecnológico de Asturias, **Jian S. Dai** King`s College, London, UK.

Conference Session Chairs

Edmund YS Chao Johns Hopkins University, USA,
Antonio Moroni Rizzoli Orthopaedic Institute, Italy,
Chunfeng Zhao Mayo Clinic, USA,
Peter Walker New York University, USA,
Oliver Marin-Pena Hospital Infanta Leonor, Spain,
Tom Joyce Newcastle University, UK,
Sean P. Hughes Imperial College London, UK,
John E. Nixon
Can A. Yucesoy Bogazici University, Turkey,
Fredrik Almqvist Ghent University Hospital, Belgium,
Daniel Kluess University of Rostock, Germany,
Emel Demircan Stanford University, USA,
Oussama Khatib Stanford University, USA,
John Leicester Williams University of Memphis, USA,
Sylwia Sobieszczyk Gdansk University of Technology, Poland,
Andrzej Zielinski Gdansk University of Technology, Poland,
Ramon Torrecillas Fundación ITMA Parque Tecnológico de Asturias, Spain,
Aldo Boccaccini Imperial College London, UK,
Cathy Holt Cardiff University, UK,
John Rasmussen Aalborg University, Denmark,
Mahmoud Chizari Brunel University, UK,
Sanjukta Deb Kings College London, UK,
Atila Ertas Texas Tech University, USA,
Emrah Gumus Texas Tech University, USA,
Stephen Copeland Reading Shoulder Unit, UK,
Jai Relwani East Kent University Hospitals Foundation Trust, UK,
Ehud Rath Ben Gurion University of the Negev, Israel,
Dylan Morrissey Queen Mary University of London, UK,
Martyn Snow Royal Orthopaedic Hospital, UK,
Bin Wang University of Aberdeen, UK,
Lennard Funk Salford University, UK,
Jian S. Dai King`s College, London, UK,

Instructional Orthopaedic Course Lecturers

Upper Limb

Ofer Levy Brunel University & Reading Shoulder Unit, UK,
Mark I Loebenberg Tel Aviv University, Israel,
Zulfi Rahimtoola Reading Orthopaedic Centre, UK,
Joydeep Sinha London Bridge Hospital, UK,
Giuseppe Sforza Worchester & Reading Shoulder Unit, UK,
Jai Relwani East Kent University Hospitals Foundation Trust, UK,
Stephen Copeland Reading Shoulder Unit, UK

Spine

John E. Nixon The London Clinic, UK,
Sean P. Hughes Imperial College London, UK,
Philip Gishen, **Kevin O`Neill**, **Mr. Khai Lam** London Spine Centre, UK,
David Harrison The Royal National Orthopaedic Hospital, UK,
Ian Shackleford

Sashin Ahuja-University Hospital of Wales & University Hospital Llandough, UK

Lester Wilson The Royal National Orthopaedic Hospital, UK

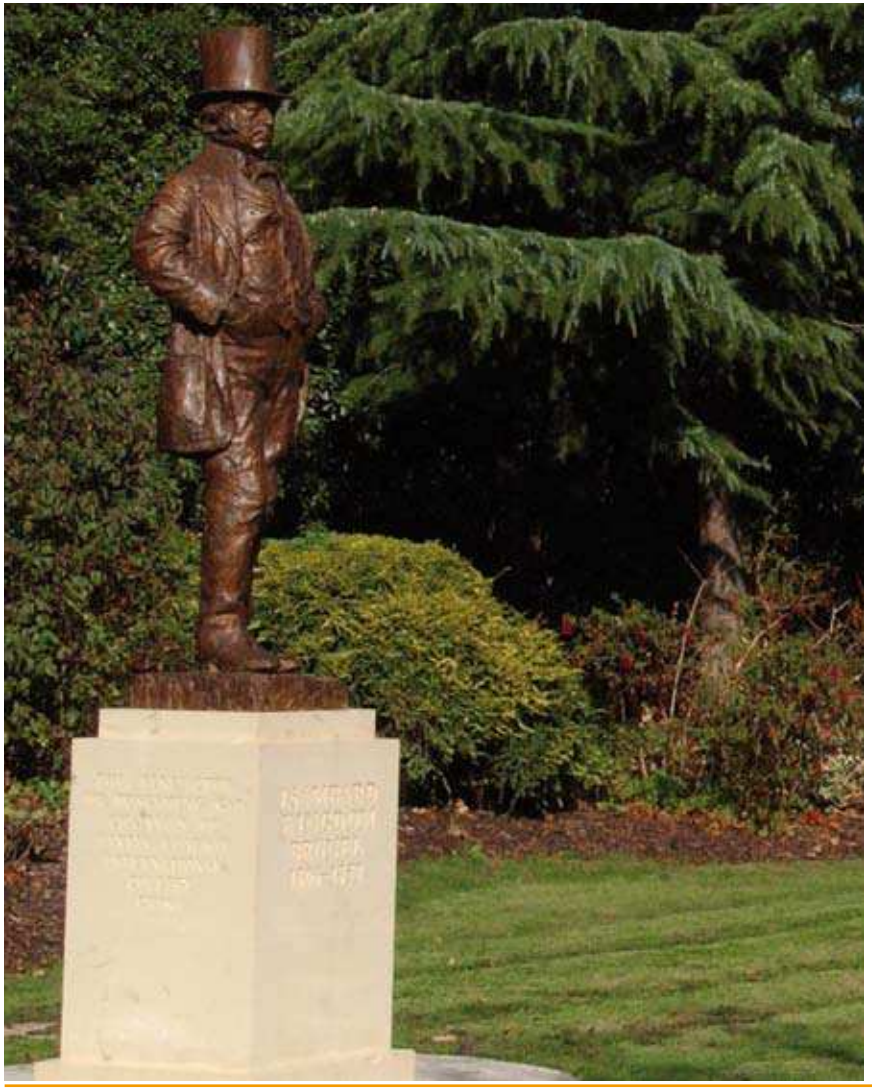
Lower Limb

Richard Field The South West London Elective Orthopaedic Centre, UK,
Rene Tayar Epsom & St Helier NHS Trust, UK,
Alex Manos Pure Sports Medicine, London, UK,
Francesco Strambi- Sienna, Italy & The South West London Elective Orthopaedic Centre, UK,
Vikas Khanduja – Addenbrooke`s Hospital, Cambridge UK,
Johan Witt - UCL, UK,
Richie Gill-Oxford University, UK,
Ibrahim Roushdi - The South West London Elective Orthopaedic Centre, UK,
Tom Pollard – Nuffiel Orthopaedic Centre, Oxford, UK,

Karthig Rajakulendran - The South West London Elective Orthopaedic Centre, UK,
Tonia Vincent The Kennedy Institute, Imperial College, London, UK,
Ajeya Adhikari The South West London Elective Orthopaedic Centre, UK,
Ronan Treacy, Royal Orthopaedic Hospitals, UK

Mr Praminder J Singh,Maroondah and Bellbird Provate Hospital, Melbourne, Austrailia

SUNDAY JUNE 6		
When	**Where**	**Event**
16.00 - 20.00	Hamilton Centre Hospitality - Zone C	**Registration**
18.00 - 20.00	Hamilton Centre Hospitality - Zone C	**Reception and Buffet Dinner**



MONDAY JUNE 7		
When	**Where**	**Event, Speakers and Chairs**
8.30 - 17.00	Lecture Centre – Zone C	Registration
	Howell Building Theatre H001– Zone D	**OPENING SESSION** Chaired by Prof. Ibrahim Esat and Dr. Neriman Ozada
9.00 - 9.10	Howell Building Theatre H001– Zone D	**Welcome** by Dr. Neriman Ozada
9.15 - 9.30	Howell Building Theatre H001– Zone D	**Opening** by Vice-Chancellor and Principal Prof. Chris Jenks
9.35 - 10-20	Howell Building Theatre H001– Zone D	**Keynote Lecture K-1 The Past Contributions and Future Fate of Clinical Engineers** by Prof. Edmund YS Chao
10-25 - 10.55	Howell Building Theatre H001– Zone D	**Plenary Lecture P-2 - Electrocrystallization of Calcium Phosphates for Orthopaedic Implants** by Prof. Noam Eliaz
11.00 - 11.30	Howell Building Theatre H001– Zone D	**Plenary Lecture P-20 Robots and the Human** By Prof. Oussama Khatib, Stanford University, Stanford, USA
11.35 - 12.05	Howell Building Theatre H001– Zone D	**Musculoskeletal Joint Modeling: State of the Art** By Dr. Neriman Ozada, Prof. Ibrahim Esat
12.05 - 12.20	Howell Building Theatre H001– Zone D	COFFEE BREAK

MONDAY JUNE 7

Where	Lecture Centre - Room Theatre B	Lecture Centre - Room LC 061	Lecture Centre - Room LC062	Lecture Centre – Room LC 065	Lecture Centre – Room LC066
Tracks	Upper Limb Surgery and Biomechanics	Biomaterials and Coating of Implants	Musculoskeletal Tissues Remodeling and Healing	Joint and Musculoskeletal System Biomechanics, Modelling and Simulation	Devices and Robotics – Surgical Robotics and Rehabilitation Robotics, Design, Devices, Mechanisms and Simulation
Track Chairs	Prof. Ofer Levy	Prof. Noam Eliaz	Prof. Sean Hughes, Prof. Edmund Chao	Prof. Edmund Chao, Dr. Neriman Ozada	Prof. Jian Dai, Prof. Ibrahim Esat
Sessions	**UPPER LIMB SURGERY: ARTHROPLASTY I**	**BIOMATERIALS AND BIOLOGICAL MATERIALS**	**CONNECTIVE TISSUE MECHANICS AND RECONSTRUCTION**	**CURRENT STATUS OF JOINT REPLACEMENT TECHNOLOGY**	**DEVICES, DESIGN , INSTRUMENTS AND SIMULATION**
Session Chairs	Prof. Ofer Levy, Dr. Ehud Rath	Dr.Sylwia Sobieszczyk, Prof. Andrzej Zielinski	Mr. Martyn Snow, Dr. Bin Wang	Prof. Peter Walker, Prof. Edmund Chao	Dr. Mahmoud Chizari, Dr. Emrah Gumus, Mr Qureish Vanat
12.20 - 12.40	**P-10** A Technological Chip on My Shoulder – Surgical Training with Simulators. *Lennard FunkSalford University, UK*	**M-9** Preparation of the Porous Biomaterial Based on Titanium Alloy for Orthopaedic Implants *T. Seramaka, W. Serbinskib, Gdansk University of Technology, Poland*	**S-38** Is Immediate Full Mobilisation Possible After Medial Ulnar Collateral Ligament Reconstruction at the Elbow? *Q. Vanat[1], M. Chizari[2] [1]St. Peters and Ashford Hospitals, UK. [2]Brunel University West London, UK*	**P-7** Future Directions in Knee Replacement *Peter S. Walker, G. Yildirim, S. Arno, Y. Heller NYU Hospital for Joint Diseases, New York, NY, USA*	**B-2** Model Generation from 3D Image Data for Biomechanics Applications: New Tools and Technologies *V Bui Xuan[1], P Young[1], D Raymont[1], A Harkara[2], R Cotton[2] [1]University of Exeter, UK [2]Simpleware Ltd., UK*
12.42 - 12.02	**L** Design Principles of the Verso, stemless-metaphyseal Reversed Prosthesis for Arthroplasty with Severe Cuff Deficiency. *Ofer Levy, Reading Shoulder Unit. UK*	**M-8** Degradation of Metallic Implants *B. Swieczko-Zurek, A. Zielinski Gdansk University of Technology, Poland*	**L** Tendons: Mirrors of Inner Health *Nicola Maffulli - Queen Mary University of London, UK*	**S-3** Accounting for Patient Variability in Finite Element Analysis of the Resurfaced Femoral Head *M. Taylor, R. Bryan, P. Nair University of Southampton, UK*	**D-6** The Development of a Rig to Test Hinged Total Knee Replacement Kinematics *R. Long, S. Gheduzzi, A. Toms, A.W. Miles University of Bath, UK*
12.04 - 13.24	**S-8** Hemiarthroplasty versus Total Shoulder Arthroplasty with the Surface Replacement Arthroplasty: Functional Outcome and Survival Analysis *O. Levy, E. Pearse, T. Even, D. Raj, R. Abrahams, A. Narvani, S. Copeland*	**M-10** Laser Remelting of the Titanium Alloy and Its Application for Biomaterials *W. Serbinski, A. Zielinski. Gdansk University of Technology, Poland*	**T-9** Evaluating the Mechanical Properties of a Tendon Graft, Using Digital Image Correlation (DIC) Technique *W. Cheung[1], J. Mahmud[2], S. Evans[2], C. Holt[2], M. Snow1, B. Wang[3], M,Chizari[3,4] [1]The Royal Orthopaedic Hospital, [2]Cardiff University, [3]Aberdeen University, UK, Brunel University, UK*	**S-2** Fixation of Segmental Bone/Joint Replacement Prosthesis *Edmund Y. S. Chao Mayo Clinic & Johns Hopkins University, USA*	**D-9** Interpositional Knee Devices: The Way Forward? *T Akram[1], F Brooks[1], A Chandratreya[1], S Roy[2], D Pemberton[2] [1]Princess of Wales Hospital, Wales, [2]Royal Glamorgan Hospital, Llantristant, Wales*
13.24 - 14.10	**LUNCH BREAK HAMILTON CENTRE - MORE FOODHALL - ZONE C**				
	WORKSHOPS AND COFFEE - EXHIBITION AREA HAMILTON CENTRE - HOSPITALITY– NEWTON ROOM – ZONE C				
14.10 - 14.35	Glenoid Fixation of Lateralised Reverse Shoulder Prosthesis DJO	Aspen Medical Products	IDO Isometer Demonstration IDO Isometer	Model Generation Software Demonstration simpleware	PLATELET RICH PLASMA IN SPORT MEDICINE Exactech
Sessions	**UPPER LIMB SURGERY: ARTHROPLASTY II**	**BIOMATERIALS AND BIOLOGICAL MATERIALS**	**BONE MECHANICS**	**NUMERICAL METHODS AND SIMULATION IN MUSCULOSKELETAL BIOMECHANICS**	**FRACTURE HEALING, ORTHOPAEDIC DEVICES AND INSTRUMENTS**
Session Chairs	Mr Stephen Copeland, Prof. Lennard Funk	Prof. Andrzej Zielinski, Dr. Sylwia Sobieszczyk	Dr. Cathy Holt, Dr. Can A. Yucesoy	Dr. Daniel Kluess, Prof. John Rasmussen	Dr. Mahmoud Chizari, Dr. Emrah Gumus
14.40 - 15.00	**S-26** Design Optimisation and Validation of the Copeland™ Thin Shell *E. Pegg, P. Smirthwaite, I Khan Biomet UK Healthcare Ltd., UK*	**P-17** Nanotubular Ti Oxide Layers for Enhancement of Bone-Implant Bonding and Bioactivity *S. Sobieszczyk[1], R. Klotzke[2] [1]Gdansk University of Technology, Poland, [2]Ship Design and Research Centre, Poland*	**T-1** Possible Explanation of Mechano-Transduction Process for Human Cortical Bone *J.M. Crolet[1], M.C. Stroe[1] and M. Racila[2] [1]University of Franche-Comté, France [2]University of Craiova, Romania.*	**B-5** Hip Joint Kinematics in Activities of Daily Living *J. Rasmussen[1], M.S. Andersen[1], R. Bichler[3], S. Carbes[4], M. de Zee[2], [1,2]Aalborg University, Aalborg, Denmark. [3]BMW AG, Munich, Germany [4]AnyBody Technology A/S, Aalborg, Denmark*	**T-17** Rib Fractures of Immature Bone: A Histological, Mechanical and Finite Element Analysis Study *T. Howard[1], M. Johnson[2], P. Mummery[2], T. Freemont[3], [1,2,3]The University of Manchester, UK*
15.02 - 15.22	**S-9** Stemless-Metaphyseal Reversed Prosthesis for Arthropathy with Severe Cuff Deficiency: 2-4 Years Results *N. Hous, A. Narvani, R. Abraham, J. Relwani, T. Even, S. Copeland, O. Levy, Reading Shoulder Unit, Royal Berkshire Hospital, Reading, UK*	**M-7** Influence of Laser Melting on Surface Layer Properties of Titanium Alloy Ti6Al4V *A. Ossowska, A Zieliński, M. Buczek, Gdansk University of Technology, Poland*	**L** Bone Tissue Scaffolds Based on Bioactive Glass and Composites: New Developments *Prof. Aldo Boccauccini Imperial College London, UK*	**P-15** From Theory to Practice: Transfer of FEA Results into Clinical Applications *D. Kluess, W. Mittelmeier, R. Bader, University of Rostock, Germany*	**D-4** Biomechanical Fracture Healing Simulation for Smart Implants Using Telemetry *J. L. Nemchand[1], A.W.Anson[1], B.J.Jones[1], D.Wilson[2], S.Taylor[3], [1]Brunel University, UK[2] Smith and Nephew Research Centre, UK[3] University College London, UK*
15.24-15.44	**S-25** Reverse Polarity Total Shoulder Arthroplasty: A Review of Patient Outcomes *Nandhara GS, Jesudason EP, Kumar A, Webber MCB Trafford General Hospital, UK*	**P-12** Production of Tubular Shape Macroporous Hydroxyapatite Ceramic Tubes Using Electrophoretic Deposition (EPD) *C.B. Ustundag[1,2], K. IOKU[3], F.Kaya[4],C. Kaya*[1,1,2] Yildiz Technical University, Istanbul, Turkey, [3]Tohoku University Sendai, Japan[4] Zonguldak Karaelmas University, Zonguldak, Turkey*	**T-19** Bone Engineering Scaffolds *E. Saiz Imperial College London, UK*	**B-3** A Real-Time Musculoskeletal Model for the Hardware-in-the-Loop Joint Simulator *S. Herrmann, R. Rachholz, R. Souffrant, M. Kähler, J. Zierath, D. Kluess, C. Woernle, R. Bader University of Rostock, Germany*	**S-27** Radiostereometric Analysis Detects Interfragmentary Micromotion in Healed Intra-Articular Fractures of the Distal Radius Treated with a Volar Locking Plate *R. Madanat, N. Strandberg, N. Moritz, S. Timlin, H.T. Aro University of Turku, Finland*
15.46-16.06	**L** Current Management of Clavicle Injuries *Dr. Mark I Loebenberg Tel Aviv University, Israel*	**M-13** Determination of Wear Behaviour of Titanium Alloys Implant Materials Blasted With Mixture of Zirconia/Silica/Hydroxyapatite Powders *A. B. Hazar[1], D. Uzunsoy[2], H. Ekşioğlu[1], O. Sen[1], H. Demir[2], V. Ömürlü[2], A. Koyun[2] [1], [2]Yildiz Technical University, Turkey*	**T-7** Quality Function Deployment for The Design of Bone Tissue Scaffolds *K.A. Blogg, J.R. Alcock Cranfield University, UK*	**D-8** The Development of a Custom-made Intra-medullary Nail for Use in an Ovine Tibial Segmental Defect Model *Briscoe A, Aarvold A, Street M, Tayton E, Smith JO, Dunlop DG, Oreffo RO, University of Southampton, UK*	**L** Western Medicine,Acupuncture, Biomechanics in the treatment of "Traumatic Torticollis with scoliosis" *Ratnarajah Premarajah, Kingsgrove Medical Centre, Australia*

Where	WORKSHOPS AND COFFEE - EXHIBITION AREA HAMILTON CENTRE - HOSPITALITY– NEWTON ROOM – ZONE C			FACULTY MEETING Room to be Confirmed	
16.10 - 16.40	Elbow/Wrist Prostheses Workshop		IDO Isometer Demonstration	Model Generation Software Demonstration	
Where	**Lecture Centre - Room Theatre C**	**LECTURE CENTRE - ROOM LC 061**	**LECTURE CENTRE - ROOM LC062**	**LECTURE CENTRE – ROOM LC 065**	**LECTURE CENTRE – ROOM LC066**
Tracks	Upper Limb Surgery and Biomechanics	Biomaterials and Coating of Implants	Musculoskeletal Tissues Remodeling and Healing	Joint and Musculoskeletal System Biomechanics, Modelling and Simulation	Devices and Robotics – Surgical Robotics and Rehabilitation Robotics, Design, Devices, Mechanisms and Simulation
Track Chairs	Prof. Ofer Levy	Prof. Noam Eliaz	Prof. Sean Hughes, Prof. Edmund Chao	Prof. Edmund Chao, Dr. N. Ozada	Prof. Jian Dai, Prof. Ibrahim Esat
Sessions	**CLAVICLE AND AC JOINT**	**BIOLOGICALLY ACTIVE COATING FOR ORTHOPAEDIC APPLICATIONS**	**CONNECTIVE TISSUE HEALING AND REMODELING**	**BIOMECHANICS OF LOWER LIMB JOINTS**	**ORTHOPAEDIC IMPLANTS AND INSTRUMENTATION**
Session Chairs	Dr. Mark I Loebenberg, Mr. Zulfi Rahimtoola	Prof. Aldo Boccaccini, Prof. Noam Eliaz	Dr. Chunfeng Zhao, Prof. Edmund Chao	Dr. Cathy Holt, Dr. Bin Wang	Mr. Giuseppe Sforza, Mr. Jai Relwani
16.40 - 17.00	**L** Anathomy and Pathology of the Acromio-Clavicular Joint *Mr. Joydeep Sinha, London Bridge Hospital, UK* **S-11** Acromioclavicular joint pain in whiplash injuries to shoulder *A. Banos, D. Halberstadt, A. Narvani, Levy Reading Shoulder Unit, Royal Berkshire Hospital, UK*	**M-18** Carbon Nanotube-Reinforced Hydroxyapatite Biocomposite Coatings by Hydrothermal Sysnthesis and Electrophoretic Deposition (EPD) *C. Kaya[1], C. B. Ustundag[1,2], F. Kaya[3] ,[1,2] Yildiz Technical University, Turkey [3]Zonguldak Karaelmas University, Turkey*	**P-3** Flexor Tendon Injury, Repair, and Rehabilitation-A Good Model For Studying Connective Tissue Healing and Remodeling *Chunfeng Zhao, Yu-Long Sun,Steven L. Moran, Peter C. Amadio, Kai-Nan An Mayo Clinic, USA*	**S-44** How Does the Position of a Hip Replacement Affect the Femoral Strain? *C. Manders, M. Taylor, University of Southampton, UK*	**D-3** Upper Limb Functional Evaluation on Baseball Pitchers Through a Portable 3D Tracking System Based on Inertial Sensors *A. Pellegrini[1], P. Garofalo[2], A.G. Cutti[2], Parel [1,2], P. Tonino[1], P. Paladini[1], F. Campi[1], G. Porcellini[1]*
17.02 - 17.22	**S-5** Hook plate versus tightrope for injuries at the lateral end of the clavicle *Anwar H.A, Wood L. Bagley C, Wilson D, Haddo, Whittington Hosptial University Hospital NHS Trust, UK*	**M-19** Electrophoretic Deposition of Chitosan and Chitosan-BioGlass® Bioactive Coatings for Orthopaedic Applications *F. Pishbin[1],A Simchi[2], M. P. Ryan[1], A. R. Boccaccini[1, 3], [1]Imperial College London, UK[2]Sharif University of Technology, Iran[3] University of Erlangen-Nuremberg, Germany*	**P-19** Harnessing Mechanobiology to Deliver Skeletal Tissue Regeneration *Allen Goodship, UCL, UK*	**S-43** Does Navigated Total Knee Replacement Lead to an Improved Functional Outcome? *JR Smith, PJ Rowe, M Blyth, B Jones, Strathclyde University, Glasgow, UK, Glasgow Royal Infirmary, UK*	**S-12** Post Traumatic Painful Shoulder: Ultrasound as a Primary Diagnostic Technique for Occult Fractures of the Proximal Humerus *E. Rath[1], N. Alkrinawi[1], D. Lebel[1], P. Snopik[1], O.Levy[2], [1]Ben Gurion University of the Negev, Israel [2]Reading Shoulder Unit, Royal Berkshire Hospital, UK*
17.24 - 17.44	**S-4** Outcome Following Clavicular Hook Plate *C. R. Jackson, A. A. Faraj, Airedale General Hospital, UK*	**M-17** Strontium Bioactive Glass Coatings for Medical Implants *N. Lotfibakhshaiesh, E. Gentleman, M.M. Stevens, R. Hill*	**T-18** Healing and Remodeling of Connective Tissues under Biophysical Stimulation in a Rabbit Patella - Patella Tendon Junction Model *H. LU[1], J. HU[1], D.XU[1], K. LI[1], L. QIN[2], K. M. CHAN[2], G. LI[2], [1]Xiangya Hospital, Central South University, China [2]The Chinese University of Hong Kong, China*	**L** Objective Classification of Healthy and Pathological Joint Function and Its Application to the Assessment of Joint Replacements *Dr. Cathy Holt, Cardiff University, UK*	**S-21** Cementless Surface Replacement Arthroplasty of the Shoulder: 15 to 25 Year Results with the Copeland Prosthesis *A. Patel, A. Narvani, T. Even, O. Levy, S. Copeland, Reading Shoulder Unit, Royal Berkshire Hospital, UK*
17.44 - 17.50	**BREAK**				
Session	**WRIST AND ELBOW ARTHROPLASTY**	**BIOCERAMICS FOR ORTHOPAEDIC SURGERY**	**CONNECTIVE TISSUE HEALING AND REMODELING**	**BIOMECHANICS OF LOWER LIMB JOINTS**	**DEVICES, DESIGN AND SIMULATION**
Session Chairs	Dr. Mark I Loebenberg, Mr. Zulfi Rahimtoola	Prof. Ramon Torrecillas, Prof. Noam Eliaz	Dr. Chunfeng Zhao, Prof. Edmund Chao	Dr. Cathy Holt, Dr. Bin Wang	Dr. Mahmoud Chizari, Dr. Emrah Gumus
17.50 - 18.10	**L** Limited Fusion of the Wrist *Mr. Zulfi Rahimtoola, Reading Orthopaedic Centre, UK*	**P-16** Ceramics for Total Joint Replacement *R. Torrecillas[1], L. A. Diaz1, J. Chevalier[2]*	**T-4** Changes in Structure and Adhesion Force of Collagen Fibril in Rat Achilles Tendinitis Utilizing AFM *G.J. Lee, S. Choi, S.J. Chae, J.H. Park, J. Chon, S. Yoo, H.K. Park* Kyung Hee University, Republic of Korea*	**S-54** Can Joint Realignment Surgery Reveal Mechanically Regulated Signals that Influence Pain and Pathology in Humans? *DJ Mason[1] , G Whatling[2], R S Kotwal[3], K Brakspear1, H Roberts[1], C Wilson1, R Williams[3], J Sultan[3], CA Holt.[2]*	**D-19** Impact Simulation for Generic Design *A.M. Otkur, E. Gumus, B. McPeak and A.Ertas , Texas Tech University, USA*
18.12 - 18.32	**L** Total Wrist Arthroplasty *Mr. Zulfi Rahimtoola, Reading Orthopaedic Centre, UK*	**M-12** Degradation of Ceramics for Hip Joint Applications: Lessons Learned and Future Trends *J. Chevalier[1], R. Torrecillas[2] 1Université de Lyon, France, [2]Nanomaterials and Nanotechnology Research Center, Spain*	**S-55** Bone quality dictates implant healing in cementless total hip arthroplasty *H. Aro, University of Turku, Finland*	**B-10** Integration of CAD and Image Data for Computational Simulation *P. Young[1], S Coward[1], D Raymont[1], R Cotton[2], A Harkara[2] [1]University of Exeter, UK, [2]Simpleware Ltd., UK*	**S-16** Micromotion Analysis of the Humeral Channel in Reversed Shoulder Arthroplasty *M. Rahman[1], Y. Shah[2], I.Esat[1], M. Chizari[1] [1]Brunel University West London, UK, [2]Royal Berkshire Hospital, UK*
18.34 - 18.54	**L** Advances in Elbow Arthroplasty *Dr. Mark I Loebenberg, Tel Aviv University, Israel*	**M-11** Biocermet, a New Structural Biomaterial for Hard Tissue Replacement Applications *J. F. Bartolomé Instituto de Ciencia de Materiales de Madrid (ICMM), Spain*	**S-56** Biomechanics of the Kienbock`s Disease *Frederic Schuind, Université libre de Bruxelles, Belgium*	**S-28** A Clinical Study of the Biomechanics of Step Descent Using Different Treatment Modalities for Patellofemoral Pain *J. Richards[1], J. Selfe[1], D. Thewlis[2], S. Hill[3]*	**S-50** What is the Optimum Method of Applying a Cervical Spine Collar? *Robert GL, Yewlett A, Ball S, Whatling G, Holt C, Speaialist Registrars in Orthopaedics, Wales, Cardiff University, Wales*
20.00 - 22.00	**CONFERENCE DINNER - HAMILTON HOSPITALITY CENTRE- NEWTOON ROOM- ZONE C**				

SCHEDULE

TUESDAY 8TH OF JUNE		
When	**Where**	**Event, Speakers and Chairs**
8.30 - 17.00	Lecture Centre - Zone C	**Registration**
	Howell Building Theatre H001 – Zone D	**OPENING SESSION** Chaired by Prof. Ibrahim Esat and Dr. Neriman Ozada
08.45 - 09.00	Howell Building Theatre H001 – Zone D	**Welcome** by Prof. Ibrahim Esat
9.05 - 09.35	Howell Building Theatre H001 – Zone D	**Plenary Lecture P-9 Orthopaedic Implant Development: 25 Years of Trials and Tribulations** Mr. Richard Field South West London Elective Orthopaedic Centre, UK
09.40 - 10.10	Howell Building Theatre H001 – Zone D	**Plenary Lecture P-1 Hip Resurfacing: The Past, the Present and the Future** Prof. Antonio Moroni Bologna University, Rizzoli Orthopaedic Institute, Italy
10.15 - 10.45	Howell Building Theatre H001 – Zone D	**Plenary Lecture P-5 Paradigms and Progress in Trauma and Orthopaedics** Mr. Mike Kimmons CEO British Orthopaedic Association, UK
10.45 - 11.15	Howell Building Theatre H001 – Zone D	**A New Musculoskeletal Joint Modeling Framework** By Dr. Neriman Ozada, Prof. Ibrahim Esat
11.15 - 11.30	Howell Building Theatre H001 – Zone D	COFFEE BREAK



Where	Lecture Centre - Room LC 061	Lecture Centre - Room LC062	Lecture Centre – Room LC 065	Lecture Centre – Room LC066	Lecture Centre - Room Theatre B
Track	Biomaterials and Coating of Implants	Musculoskeletal Tissues Remodeling and Healing	Joint and Musculoskeletal System Biomechanics, Modelling and Simulation	Lower Limb Surgery and Clinics -1	Lower Limb Surgery and Clinics – 2 (Course)
Track Chairs	Prof. Noam Eliaz	Prof. Sean Hughes, Prof. Edmund Chao	Prof. Edmund Chao, Dr. N. Ozada	Prof. Antonio Moroni	Mr. Richard Field
Sessions	**BIOMATERIALS AND BIOLOGICAL MATERIALS**	**MUSCULAR FORCE TRANSMISSION AND REMEDIAL SURGERY**	**HIP AND KNEE KINEMATICS AND KINETICS**	**HIP BEARINGS**	**JOINT PRESERVING HIP SURGERY**
Session Chairs	Dr. Sylwia Sobieszczyk, Prof. Andrzej Zieleński	Dr. Can A. Yucesoy	Prof. John L. Williams	Prof. Antonio Moroni, Dr. Oliver Marin-Pena	Mr. Richard Field
11.30 - 11.50	**P-4** Biocompatibility and Bioactivity of Bearing Loaded Metallic Implants *Andzej Zieliński, S. Sobieszczyk[a], B. Świeczko-Żurek, A. Ossowska, T. Seramak[b]*	**T-15** Epimuscular Myofascial Force Transmission: Novel Muscular Mechanics Principles Likely to Play Important Roles in Orthopaedic Remedial Surgery *Can A. Yucesoy[aa]*	**P-11** Using Multibody Dynamics to Design Total Knee Implants *John L. Williams, University of Memphis & InMotion Orthopaedic Research Center Memphis, Tennessee, USA*	**S-34** Clinical Outcomes of Metal-Polyurethane Bearings in Hip Arthroplasty *A. Moroni, M. Hoque, G. Micera, F. Sinapi, S. Giannini Bologna University, Rizzoli Orthopaedic Institute, Italy*	History, symptom patterns and physical signs of early stage hip disease *Mr. Praminder Singh, Maroondah and Bellbird Private Hospitals, Australia*
11.52 - 12.12	**M-5** Can A polycarbonate-Urethane Meniscal Implant Provide Chondroprotection? Results in a Sheep Model *[1]J.J. ELSNER, [1]G. ZUR, [1]E. LINDER-GANZ, [1]J. SHANI, 1O. BRENNER, [2]E. HERSHMAN, 1A. SHTERLING, [3]F. GUILAK*	**T-13** Effects of Scar Tissue Formation Following Tendon Transfer on Muscular Force Transmission in the Rat *H. Maas[a], M. J. Ritt [b], P. A. Huijing [a] [a] VU University, The Netherlands [b] VU University Medical Center, The Netherlands*	**B-13** Interactions between Cup Position and Range of Motion Post Hip Replacement *P. J. Ellison, C. Lowry, S.N. Collins, Corin Ltd, UK*	**S-33** Cushion-Bearings in Total Hip Replacement: Nature`s Approach to the Synovial Joint Problem *[1]E. Nocco, [1]A. Greene, [1]Avi Shterling, [1]R. Treharne Active Implants Corporation, USA*	Radiological Investigations of Hip Pain *Dr. Rene Tayar, Epsom & St Helier NHS Trust* The economics of surgical treatments for early stage hip disease *Mr Richard Field, South West London Elective Orthopeadic Centre, UK*
12.14 - 12.34	**M-20** The Effect of Acetabular Inclination on the Stress Distribution of Highly Cross-Linked Polyethylene Liners *L. Lam, T. Drew, P. Boscainos, Ninewells Hospital, UK*	**T-14** Myofascial Connections Affect Flexor Carpi Ulnaris Muscle Function of Cerebral Palsy Patients *MJC Smeuldersa , M Kreulena [a,b]*	**B-15** Comparison of Osteoarthritic Knee Kinematics and Kinetics with age matched Healthy Individuals *P. Worsley, M. Stokes, M. Taylor, University of Southampton, UK*	**S-36** UHMWPE for Hip Bearings: Past, Present and Future *R. Chiesa, Materials and Chemical Engineering 'G. Natta'Politecnico di Milano Via Mancinelli , Italy*	Treatment options for early stage hip disease - The Role of Physiotherapy *Mr. Alex Manos, Pure Sports Medicine, London* Treatment options for early stage hip disease - The Role of Injections *Dr. Francesco Strambi, Sienna, Italy & South West London Elective Orthopaedic Centre, UK*
12.34 - 13.30	**LUNCH BREAK HAMILTON CENTRE - MORE FOODHALL - ZONE C**				
13.30 - 13.50	**WORKSHOPS AND COFFEE - EXHIBITION AREA HAMILTON CENTRE - HOSPITALITY– NEWTON ROOM – ZONE C**				
	Aspen Medical Products Inc.	CR SLOPE WITH THE OPTETRAK KNEE SYSTEM Exactech United Kingdom	3D – KNEE AN ACL SUBSTITUTING DESIGN DJO	Imaging Biomechanics and Simulation simpleware	FACULTY MEETING Room **tbc**
Sessions	**TRIBOLOGY AND WEAR OF IMPLANTS**	**MUSCULAR FORCE TRANSMISSION AND REMEDIAL SURGERY**	**HIP AND KNEE KINEMATICS AND KINETICS**	**HIP BEARINGS AND HIP ARTHROPLASTY OUTCOMES**	**JOINT PRESERVING HIP SURGERY**
Session Chairs	Dr. Tom Joyce, Prof. Andrzej Zielinski	Dr. Can A. Yucesoy	Prof. John L. Williams	Prof. Antonio Moroni, Dr. Oliver Marin-Pena	Mr. Richard Field
13.50 -1 4.10	**S-42** Hip Resurfacing and Metal Ion Release *C. Pattyn, E. Audenaert, Ghent University Hospital, Belgium*	**T-10** Intermuscular Myofascial Connections of FCU Contribute to Wrist Flexion Torque in the Spastic Arm of Cerebral Palsy Patients *M de Bruin [a], MJC Smeulders [a], M Kreulena [a,b] ,*	**S-29** Indications for Hip Arthroscopy Following Hip Resurfacing Arthroplasty *E. Audenaert, C Pattyn Ghent University Hospital, Belgium*	**M-21** Ceramic-on-metal Hip Replacements: A Novel Bearing Combination *[1]Sophie Williams, [1,2]Graham Isaac, [1]John Fisher*	Treatment options for early stage hip disease – The Role of Hip Arthroscopy *Mr. Vikas Khanduja, Addenbrooke's Hospital, Cambridge*
14.12 - 14.32	**M-14** Design, Preparation and Mechanical Properties of Layered Bionic Artificial Articular Cartilage/Bone Composite Implants *Y. Ma[1], Y. Zheng[1], W. Song[2], T. Hu[1], T. Xi[1], X. Huang[1], H. Yang[1]*	**T-11** Remedial Surgery May Cause Sizable Effects Also at Unintended Sites Due to Epimuscular Myofascial Force Transmission *F. Ates [a], P. A. Huijing [b], C. A. Yucesoy [a]*	**B-12** Three Dimensional Assessment of Cam Engagement in Femoroacetabular Impingement *E. Audenaert, C Pattyn, Ghent University Hospital, Belgium*	**S-37** In-Vivo like Testing of Ceramic Ball Heads *T. Pandorf, R. Preuss, CeramTec AG, Medical Division, Germany*	Treatment options for early stage hip disease – The Role of Open Surgery *Mr. Johan Witt, University College, London*
114.34 - 14.54	**M-1** A Multi Rig Screening Test for Thin Ceramic Coatings in Bio-Tribological Applications *Lubinski J.I., Druet K., Olszewski A., Neyman A., Sikora J. Gdansk University of Technology, Poland*	**T-12** Is Myofascial Force Transmission Compensating for the Harvested Hamstrings in Anterior Cruciate Ligament Reconstruction? *M.Karahan [a], F. Ates [b], O.Başçı [a], U.Akgün [c], C. A. Yucesoy [b]*	**S-1** A Custom-Made Guide for Femoral Component Positioning in Hip Resurfacing Arthroplasty: Development and Validation Study *C. Pattyn[1], K. De Smedt[2], F. Gelaude[2], T. Clijmans[2], J. Dille[2], B. Geebelen[2], E. Audenaert [1]*	**S-52** Hip Resurfacing: Clinical Findings after Our First 486 Cases *M. Ribas, University Hospital Dexeus, Spain*	Computer Simulation for early intervention surgical training *Dr Richie Gill, Oxford Universrsity*
14.56 - 15.16	**L** How To Get Really Bad Results with Metal/Metal Bearings! *Ronan Treacy, Royal Orthopaedic Hospital, UK*	**P-13** Myofascial Force Transmission Has Major Implications for Orthopaedic Remedial Surgery *Can A. Yucesoy, Bogazici University, Turkey*	**B-4** Direct and Indirect Biomechanical Changes during Gait Following Total Knee Arthroplasty *J. Richards[1], D Thewlis[2], S Shaw[3]*	**S-53** Personal Experience with HA-Coated Total Hip Arthroplasty *M. Villanueva, University Hospital Gregorio Marañon, Spain*	Prehab/Rehab - The Role of Physiotherapy for Surgical Patients.*Mr. Alex Manos Pure Sports Medicine, London Case histories, R. Field, J. Witt & V. Khanduja*

TUESDAY JUNE 8

15.20 - 16.00		**GAIT COURSE - CODA MOTION GAIT LAB**			
Where	**Lecture Centre - Room LC 061**	**Lecture Centre - Room LC062**	**Lecture Centre - Room LC 065**	**Lecture Centre – Room LC066**	**Lecture Centre - Room Theatre B**
Track	Biomaterials and Coating of Implants	Musculoskeletal Tissues Remodeling and Healing	Joint and Musculoskeletal System Biomechanics, Modelling and Simulation	Lower Limb Surgery and Clinics -1	Lower Limb Surgery and Clinics – 2 (Course)
Track Chairs	Prof. Noam Eliaz	Prof. Sean Hughes, Prof. Edmund Chao	Prof. Edmund Chao, Dr. N. Ozada	Prof. Antonio Moroni	Mr. Richard Field
Session	Cements in Orthopaedic Surgery	Muscular Link Between Movement and Pathology	Computer Aided Techniques in Orthopaedic Surgery: Role of Navigation	Hip Arthroplasty and Biomechanics	Pathogenesis of Degenerative Hip Disease
Session Chairs	Dr. Sanjukta Deb, Dr. Sylwia Sobieszczyk	Dr. Dylan Morrisey, Dr. Emel Demircan	Prof. Fredrik Almqvist, Dr Mahmoud Chizari	Prof. Antonio Moroni	Mr. Richard Field
16.00 - 16.20	**M-3** Nanocomposite Bone Cements for Orthopaedic Applications *N. Dunne[1], R. Ormsby[1], T. McNally[1], C. A. Mitchell[2], D. Martin[3], P. Halley[3], T. Nicholson[3] T. Schiller[3], L. Gahan[5], A. Musumeci[3], S. V. Smith[4]*	**T-16** Modeling and Experimental Identification for Muscular Force Estimation Based on Evoked EMG in FES *M. Hayashibea, Q. Zhanga, D. Guirauda, C. Fattalb, P. Fraissea, aLIRMM-INRIA, DEMAR Project, France bPropara Rehabilitation Center, France*	**P-22** The Role of Computer Navigation in Assessing Knee Kinematics During Total Knee Replacement *Ajeya Adhikari ,The South West London Elective Orthopaedic Centre, UK*	**S-22** Complications Following Hip Hemiarthroplasty; Are We Within Acceptable Standards? *Hamza A, Aslam-Pervez N, Leeds General Infirmary, UK*	The pathogenesis of articular cartilage degeneration – a Rheumatologist's perspective *Dr Tonia Vincent, The Kennedy Institute, Imperial College, London, UK*
16.22 - 16.42	**M-2** Biocompatibility of Bioactive Acrylic Formulations Loaded with Bisphosphonates J. *Parra,[1] T Calvo-Férnandez,[2] B. Vázquez,[2] A. López-Bravo,[1] J. San Román[2]*	**T-20** Multichannel EMG of the Hamstring and Calf Muscles - What New Information Can It Tell Us? *D.Morrissey, S. Sakthibalan, J. Douglas, D. Bader, Y. Hao, R. Foster, R. Twycross-Lewis,R. Woledge Queen Mary University of London, UK*	**B-16** Analysis of Knee Kinematics with Computer Navigation *K Deep, F Picard, J Baines, AH Deakin Golden Jubilee National Hospital, UK*	**T-2** Stress Behaviour of the Proximal Femur with Variation in Geometry *S. Van[1], B. Wang[1], M. Barrett[2], M. Chizari1[3], [1]University of Aberdeen, UK [2], The University of Manchester, UK [3]Brunel University, UK*	Developmental Hip Conditions – Natural History *Mr. Richard Field, South West London Elective Orthopaedic Centre, UK*
16.44 - 17.04	**P-14** Cements in Orthopaedic Surgery *Sanjukta Deb, King's College London, UK*	**T-21** When are sarcomeres in danger from injury? *R.Woledge, Imperial College London, UK*	**L** Use of Software Driven Tools in Knee Arthroplasty *Mr. Ajeya Adhikari , The South West London Elective Orthopaedic Centre, UK*	**S-51** Traumatic Dislocation and Fracture Dislocation of Hip: A Retrospective Study of 209 Cases, *S. Kashyap Indira Gandhi Medical College and Associated Hospitals, India*	Imaging the Hip Joint – How to do it properly *Dr. Rene Tayar, Epsom & St Helier NHS Trust* Is Osteoarthritis of the Hip ever Idiopathic? *Mr. Ibrahim Roushdi, The South West Thames Orthopaedic TrainingProgramme*
17.04 - 17.30	**WORKSHOPS AND REFRESHMENTS**		**EXHIBITION AREA HAMILTON HOSPITALITY CENTRE- NEWTON ROOM- ZONE C**		
Sessions	**METAL ON METAL HIP RESURFACING**	**MUSCULAR LINK BETWEEN MOVEMENT AND PATHOLOGY**	**COMPUTER AIDED TECHNIQUES IN AND KNEE ORTHOPAEDIC SURGERY: ROLE OF NAVIGATION**	**HIP BEARINGS, HIP ARTHROPLASTY AND ARTHROSCOPY**	**PATHOGENESIS OF DEGENERATIVE HIP DISEASE**
Session Chairs	Dr. Tom Joyce	Dr. Dylan Morrisey, Dr. Emel Demircan	Mr. Ajeya Adhikari, Prof. John L. Williams	Dr. Ehud Rath,	Mr. Richard Field
17.10 - 17.30	**P-8** Metal -on- Metal Resurfacing Hip Prostheses: Hero or Villain? *Tom Joyce, D. Langton, J. Lord, A. Nargo, Newcastle University, UK*	**T-5** Resistance Training in Rehabilitation after Anterior Cruciate Ligament Injury *M Morrissey, King's College London, UK* **L** Effects of Chronic Disuse on muscle and Tendon	**S-32** Finite Element Analysis and Mechanical Testing of a New Revision Knee System: DA 360 *E. Pegg, SY Mak, M. Collins, I Khan Biomet UK, Healthcare Ltd., UK*	**P-18** Hip Arthroscopy–an Emerging Technique and Indications *E. Rath, Ben Gurion University of the Negev, Israel*	Femoro-Acetabular Impingement *Mr. Vikas Khanduja, Addenbrooke's Hospital, Cambridge*
17.32 - 17.52	**M-16** A New Tool to Assess Corrosion and Metal Ion Release in Artificial Hip Joints *Y. Yan, A. Neville, J. Hesketh, D. Dowson, S. Williams, J. Fisher, University of Leeds, UK*	**T-6** Rehabilitative Ultrasound Imaging of Muscle in Orthopaedic Conditions *M Stokes, University of Southampton, UK*	**S-48** Propionibacterium Acnes Infection after Hip and Knee Arthroplasty: A Diagnostic Challenge *V. Ramasamy, T. Andrade, C. Fergusson, S. Iyer, Royal Berkshire Hospital, UK*	**L** Hip Resurfacing in Patients under 50 *Ronan Treacy, Royal Orthopaedic Hospital, UK*	New findings on mechanical impingement *Mr. Tom Pollard, Nuffiel Orthopaedic Centre, Oxford*
17.54 - 18.14	**S-39** Tribological Testing of Implants under More Physiological Conditions in Vitro *[1]A. Kamali; [1]J.Pamu; [2]J.T Daniel; 1A. Hussain; 1C. Li*	**S-7** Postoperative External Rotation as Predictor of Humeral Head Re-centering on the Glenoid Following Humeral Surface Arthroplasty (HSA) *E.O. Pearse, S. A. Copeland, O. Levy Reading Shoulder Unit, UK*	**L** The History and Evolution of Total Knee Replacements *Mr. Vikas Kanduja, Addenbrooke's Hospital, UK*	**L** Minimum 10 Year Follow up of Birmingham Hip Resurfacing *Ronan Treacy, Royal Orthopaedic Hospital, UK*	The influence of lifestyle *Mr. Karthig Rajakulendran, South West London Elective Orthopaedic Centre, UK* Economic Burdon of Degenerative Hip Disease- Is there a Case for Early Treatment *Mr Brian Wells, Mr Karthig Rajakulendran, The South West London Elective Orthopaedic Centre*
20.00-22.00	**CONFERENCE AWARD DINNER - HAMILTON HOSPITALITY CENTRE- NEWTON ROOM- ZONE C**				

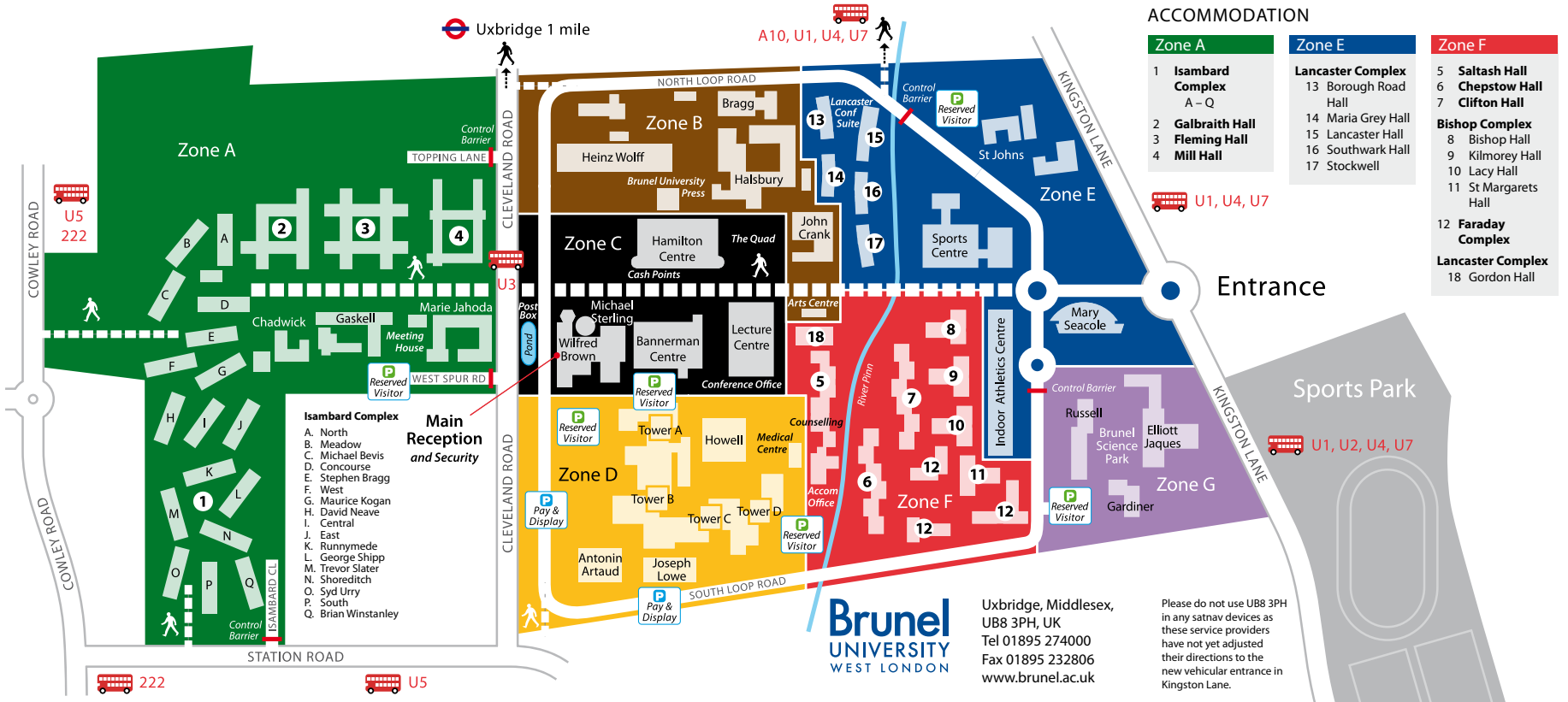
WEDNESDAY 9TH OF JUNE		
When	**Where**	**Event, Speakers and Chairs**
8.30 - 17.00	Lecture Centre - Zone C	**Registration**
		OPENING SESSION Chaired by Prof. Ibrahim Esat and Dr. Neriman Ozada
08.45 - 09.00	Howell Building Theatre H001– Zone D	**Welcome** by Prof. Ibrahim Esat and General Information about the conference AND Information about the Closing
9.05 - 09.35	Howell Building Theatre H001– Zone D	**Plenary Lecture P-6 Stem Cells in Low Back Pain** By Prof. Sean Hughes Imperial College London, UK
09.40 - 10.10	Howell Building Theatre H001– Zone D	**Plenary Lecture P-21 Mechanisms Development for Surgical Robotics and Rehabilitation Robotics** By Prof. J. S. Dai King's College London, UK
10.15 - 10.45	Howell Building Theatre H001– Zone D	**Plenary Lecture P-23 Shoulder Surgery – Past Present and Where Are We Going? - A Perspective of 40 Years** Mr. Stephen Copeland Reading Shoulder Unit, Royal Berkshire Hospital, UK
10.45 - 11.15	Howell Building Theatre H001– Zone D	**Joint Invariants – New Paradigms For Joint Modelling** By Dr. Neriman Ozada, Prof. Ibrahim Esat
11.15 - 11.30	Howell Building Theatre H001– Zone D	COFFEE BREAK

WEDNSDAY JUNE 9

Where	Lecture Centre - Room Theatre B	Lecture Centre - Room LC 061	Lecture Centre - Room LC062	Lecture Centre – Room LC 065	Lecture Centre – Room LC066
Track	Upper Limb Surgery and Biomechanics	Biomaterials and Coating of Implants	Musculoskeletal Tissues Remodeling and Healing	Joint and Musculoskeletal System Biomechanics, Modelling and Simulation	Devices and Robotics – Surgical Robotics and Rehabilitation Robotics, Design, Devices, Mechanisms and Simulation
Track Chairs	Prof. Ofer Levy	Prof. Noam Eliaz	Prof. Sean Hughes, Prof. Edmund Chao	Prof. Edmund Chao, Dr. Neriman Ozada	Prof. Jian S. Dai, Prof. Ibrahim Esat
Session	**UPPER LIMB SURGERY**	**TRIBOLOGY AND WEAR OF IMPLANTS**	**INTERVERTEBRAL DISC AND SPINAL SURGERY**	**SIMULATION TECHNOLOGY IN MUSCULOSKELETAL BIOMECHANICS**	**SURGICAL ROBOTICS AND REHABILITATION**
Session Chairs	Mr. Giuseppe Sforza, Mr. Ali Narvani	Dr. Tom Joyce, Prof. Andrzej Zielinski	Prof. Sean Hughes, Prof. Edmund Chao	Prof. Edmund Chao, Prof. Ibrahim. Esat	Prof. Jian S. Dai
11.30 - 11.50	**S-19** Arthroscopic Treatment of the Fractures of the Radial Head *P. R. Rolla[1], F. Rosa[1], G. Sforza[2]* *[1]Istituto Clinico Humanitas, Italy, [2]Reading Shoulder Unit, Royal Berkshire Hospital, UK*	**S-41** The Wear of Explanted Resurfacing Hip Prostheses *J. Lord, T. Joyce, D. Langton, A. Nargol, Newcastle University, UK*	**T-8** Stem Cells and Fracture Healing: Development of a Translational Pathway for using the autologous progeny Omnicytes® in the early phase of healing tibial fractures. *Y.C. Lok, S.P.F. Hughes, Imperial College London, UK*	**B-1** Simulation Technology for Biomechanical Analyses of Musculoskeletal System *Edmund Y. S. Chao, Mayo Clinic & Johns Hopkins University, USA*	**D-13** A Metamorphic Instrumental Hand for Robot Assisted Minimally Invasive Surgery *H. Luo and S.Wang, Tianjin University, China*
11.52 - 12.12	**S-45** Distal Radial Volar Locking Plates: How many distal screws are required and where should they be? *S Baliga, Aberdeen Royal Infirmary, UK*	**S-40** Edge Loading and Wear of Metal on Metal Hip Resurfacing Devices *Azad Hussain, Katrina Packer, Chenxi Li, Amir Kamali Smith & Nephew Orthopaedics Ltd, UK*	**L** Imaging of the Spine: What is the Best Way of Finding the Problem in the Spine? Can we Afford it? *Prof. Philip Gishen*	**D-10** A Navigated Unilateral External Fixation System for Deformity Correction Incorporating Preoperative Surgical Simulation and Intraoperative Razor Guidance *I. Ohnishi, T. Matsumoto, M. Bessho, S. Ohashi, K Tobita, M. Kaneko, and K Nakamura University of Tokyo, Japan*	**D-14** Actuation Force Control of a Redundantly Actuated Parallel Mechanism for Ankle Rehabilitation *J. Saglia[1], J. S. Dai[1], D. Caldwell[2] [1]King's College London, UK [2]Italian Institute of Technology, Italy*
12.14 - 12.34	**S-18** The Role of Arthroscopy in Revision of Unsuccessful Operative Shoulder Stabilization: Review of Literature and Clinical Outcomes at Minimum 2 Years Follow-up *S. De Giorgi[1], R.Garofalo[2], F. Rosa[3], G. Delle Rose[3], A. Castagna[3]*	**S-30** Friction in Ball-and-Socket Total Disc Arthroplasty *P.M. Moghadas, D. W. L. Hukins, D. E. T. Shepherd, A. Mahomed, University of Birmingham, UK*	**L** Surgical Navigation of the Spine How Accurate is it? Isn't it like Losing Control of Surgery to a Computer or Robot? *Mr. Kevin O'Neill*	**MJM** Musculoskeletal Joint Modelling and MJM Software *N. Ozada, I. Esat*	**D-16** Fiber Optic Based Tactile Array Sensing for Integration with Robotic Hand: Towards Robot-Assisted Rehabilitation *P. Báez, S. Chhaniyara, A.Ataollahi, P. Polygerinos, P.Puangmali, H. Liu, X.Song and K. Althoefer*
12.34 - 13.10	**LUNCH BREAK HAMILTON CENTRE - MORE FOODHALL - ZONE C**				
13.10 - 13.40	**WORKSHOPS AND COFFEE - EXHIBITION AREA HAMILTON HOSPITALITY CENTRE – NEWTON ROOM – ZONE C**				
	THE EQUINOXE INTEGRATED SHOULDER SYSTEM	THE CODAMOTION SYSTEM CONFIGURATION		MODEL GENERATION SOFTWARE DEMONSTRATION	IDO Isometer Demonstration
Session	**BIOMECHANICS AND CLINICAL APPLICATIONS**	**TRIBOLOGY AND WEAR OF IMPLANTS**	**INTERVERTEBRAL DISC AND SPINAL SURGERY**	**MUSCULOSKELETAL BIOMECHANICS, CONTROL AND SIMULATION**	**SURGICAL ROBOTICS AND REHABILITATION**
Session Chairs	Mr. Joydeep Sinha	Dr. Tom Joyce, Prof. Andrzej Zielinski	Prof. Sean Hughes, Mr. John E. Nixon	Prof. Oussama Khatib, Dr. Emel Demircan	Prof. Jian S. Dai
13.40 - 14.00	**S-20** Clinical Application of Biomechanics Principles in Shoulder Arthroplasty *G. Sforza[1], F. Rosa[2] [1]Alexandra Hospital, UK; [2]Istituto Clinico, Humanitas, Italy*	**S-47** Investigating MOM Resurfacing Hip Failure – A Novel Methodology *A. Roques[1], C Maul C[2], A Taylor[1], M Tuke[1] [1]Finsbury Orthopaedics Ltd, UK[2] Redlux Ltd, UK*	**L** Minimal Intervention Surgery, Can it all be done down a tube? Can Any Spinal Surgeon Achieve This Given Appropriate Training? *Mr. Khai Lam, London Spine Centre, UK*	**D-7** Robotics-Based Human Dynamic Performance Analysis *E. Demircan, O. Khatib, Stanford University, CA 94305, USA*	**D-11** A Combined Passive and Active Joints Robotic System for Photodynamic Therapy for Port Wine Stains *G.Bian[1], Q. Huang[1], X.Duan[1], Hui Li[1], X.Wang[1], H.Zhao[1], and Y. Gu[2] [1]Beijing Institute of Technology, China [2] Chinese People Liberation Army General Hospital, China*
14.02 - 14.22	**L** Clinical Applications of Shoulder Biomechanics in Day to Day Practice *O. Levy, Reading Shoulder unit, Royal Berkshire Hospital, UK*	**M-6** Wear Rate Evaluation of a Novel Polycarbonate-Urethane Cushion Form Bearing for Artificial Hip Joints *[1]J.J. Elsner, [1]Y. Mezape, [1]G. Zur, [1]A. Shterling, [2]N. Eliaz [1]Active Implants Corporation, Israel [2]Tel Aviv University, Israel*	**L** The Intervertebral Disc. When the disc has failed is it better to: Remove it or Fuse it? *Mr. David Harrison, The Royal National Orthopaedic Hospital, UK*	**B-8** Applied Biomechanics: Aesthetic Perception in Dance *G. Morey Klapsing[1], M. Castañer Balcells[2], C. Torrents Martín[2], T. Jofre Marín[1], [1]Laboratory for Functional Footwear Analysis INESCOP Inca, Spain. [2]Laboratory of Human Motricity Observation – INEFC University of Lleida, Spain*	**D-5** Kinematics Analysis of a Novel Ankle Rehabilitation Robotics *P. Sui, L. Yao and Z. Lin, Fuzhou University, China*
14.24 - 14.44	**L** Role of Navigation in Shoulder Arthroplasty *Jai Relwani, East Kent University Hospitals Foundation Trust, UK*	**S-35** Incidence of Adverse Reactions to Metal Debries Following Hip Resurfacing Arthroplasty: A Multicentre Study Involving 4,000 Patients *D J Langton[1], T J Joyce[1], J Lord[1], S S Jameson, J Holland, A V F Nargol, K De Smet*	**L** The Intervertebral Disc When the disc has failed is it better to: Replace it with New Prosthetic Disc? *Mr. Ian Shackleford*	**B-11** COP and COM Control during STS: Effects of Ageing *M.Vanoncinia,b, N.Ramdania, P.Fraissea and T.Kellerb[a] Lirmm,Université Montpellier, France[b] Health and Quality of Life Unit, Fatronik-Tecnalia, Spain*	**D-2** A Novel Extractor Device for Removal of Intramedullary Nails *A Sharma, C Gautrey, I Marks, N Rushton, Addenbrooke's Hospital, UK*
14.46-15.06	**S-17** Arthroscopic Anterior Shoulder Stabilization in Elite Rugby Players *F. Rosa[1], V. Calvisi[2], M. Borroni[1], N. Markopoulos[1], A. Castagna[1].*		**L** Surgical Management of Cervical Spine Fractures *Mr. Sashin Ahuja, University Hospitals of Wales & University Hospital Llandough, UK*	**B-9** Applied Biomechanics: Footwear Industry *G. Morey Klapsing[1], T. Jofre Marín[1], E. Montiel Parreño [1]Laboratory for Functional Footwear Analysis INESCOP Inca, Spain*	**S-46** Experimental Investigation of Ultrasonic-Assisted Bone Drilling *V. Khademi, J. Akbari, F. Farahmand, E. Masoumi K. A.Sharif, University of Technology, Iran*
	WORKSHOPS - EXHIBITION AREA HAMILTON HOSPITALITY CENTRE – NEWTON ROOM – ZONE C				
15.10-15.40		GAIT COURSE - CODA MOTION GAIT LAB			IDO Isometer Demonstration

Where	Lecture Centre - Room Theatre B	Lecture Centre - Room LC 061	Lecture Centre - Room LC062	Lecture Centre – Room LC 065	Lecture Centre - Room Theatre B
Track	Upper Limb Surgery and Biomechanics	Orthopaedic Surgery	Musculoskeletal Tissues Remodeling and Healing	Joint and Musculoskeletal System Biomechanics, Modelling and Simulation	Track: Devices and Robotics – Surgical Robotics and Rehabilitation Robotics, Design, Devices, Mechanisms and Simulation
Track Chairs	Prof. Ofer Levy		Prof. Sean Hughes, Prof. Edmund Chao	Prof. Edmund Chao, Dr. N. Ozada	Prof. Jian S. Dai, Prof. I. Esat
Session	**SHOULDER RECONSTRUCTION & RECOVERY**	**GENERAL ORTHOPAEDICS AND SURGERY**	**INTERVERTEBRAL DISC AND SPINAL SURGERY**	**MODELLING, SIMULATION AND SOFTWARE**	**SURGICAL ROBOTICS AND REHABILITATION**
Session Chairs	Mr. Stephen Copeland	Dr. Mahmoud Chizari, Dr. Bin Wang	Prof. Sean Hughes, Mr. John E. Nixon	Prof. John Rasmussen	Prof. Jian S. Dai
15.40 - 16.00	**S-10** Pattern and Time Phase of Shoulder Function and Power Recovery after Arthro-scopic Rotator Cuff Repair *A. Huges, T. Even, A. Narvani, O. Levy, Reading Shoulder Unit, UK*	Consent for elective orthopaedic surgery: an audit *N. Beresford-Cleary[1]; J. Halliday[1]; S. Breusch[1].. [1]Department of Orthopaedics Edinburgh University The Royal Infirmary of Edinburgh*	**L** Non Fusion Techniques for Lumbar Disc Degeneration *Mr. Sashin Ahuja, University Hospitals of Wales & University Hospital Llandough, UK*	**B-7** Developing and Manufacturing Custom-Made Medical Implants *R Cotton[1], A Harkara[1], C Lawrie[2], C Whittington[3] [1]Simpleware Ltd., UK [2]Delcam Healthcare Division, Delcam PLC, UK, [3]Camplex NZ Ltd, New Zealand*	**D-12** Mechanism Design Issues for Minimally Invasive Surgical Robots *C.H. Kuo[1], J. S. Dai[1], P. Dasgupta[2] [1]King's College London, UK [2]Guy's and St Thomas' Hospitals NHS Foundation Trust, UK*
16.02 - 16.22	**S-13** Management of Shoulder Dislocation in the Older Patient *H. Dabasia, A. Banos, A. Narvani, O. Levy, Reading Shoulder Unit, Royal Berkshire Hospital, UK*	**M-4** Modelling Dough as an Alternative to Bone Cement a Comparison of Their Use of in Orthopaedic "Dry Bone" Workshops *R. M. Seagger, Royal United Hospital, UK*	**L** Aspects of Spinal Fusion Surgery *Mr. Lester Wilson, Royal National Orthopaedic Hospital, UK*	**D-18** Auto-Parametric Vibration: Simulation Using Adams *E. Gumus and A.Ertas, Texas Tech University, UK*	**D-17** Human Hip Joint Simulator with Feedback Control System *N.Alhaifi, K. Alrashdan, S. Poli, I. Esat, Brunel University, UK*
16.44 - 17.04	**L** Late Osteotomy and fixation of malunited fractures of the proximal humerus *Jai Relwani, East Kent University Hospitals Foundation Trust, UK*	**S-15** Stress Analysis of a Reverse Shoulder Implant at the Interface between the Implant and Bones *N. Abulkhair[1], Y. Shah[2], I. Esat[1], M. Chizari[1] 1Brunel University West London, UK [2]Royal Berkshire Hospital, UK*	**L** Bone graft substitutes *Mr. Lester Wilson, Royal National Orthopaedic Hospital, UK*	**D-15** Evaluating the Elbow Joint Laxity Using Stewart Platform Mechanism: An Experimental Study *M. Alrashidi[1], I. Yalidus, Q. Vanat[2], K. Alrashdan[1], I. Esat[1], M. Chizari[1], 1 Brunel University, UK, [2] St George's Hospital, UK*	**D-1** Elbow Joint Laxity and Stability Analysis Using Image Based Method *K. Alrashdan, M. Alrashidi, I. Esat, N. Alhaifi Brunel University, UK*
16.46 - 17.06	**S-6** Minimal Tourniquet Pressure to Maintain Arterial Closure in Normotensives and Hypertensive Subjects in Upper and Lower Limb Surgery: Preliminary Report *S. Gurevitz, T. Even, A. Narvani, O. Levy Reading Shoulder Unit, UK*	**S-49** Google Orthopaedics - World Wide Web and Shoulder Arthroscopy *V. Ramasamy, V. Devadoss, Rochdale Infirmary, UK*	**T-3** Spinal Tumour Referrals to a Tertiary Spinal Centre *GS Nandhara, JB Williamson, R Verma, ERS Ross, NJ Oxborrow, H Dashdti, S Mohammad, Salford Royal Foundation Trust, UK*	**B-6** Modelling and Simulation of Human Articulated Joints Using a Physics Engine *K. Alrashdan, M. Alrashidi, I. Esat, N. Ozada, Brunel University, UK*	**S-31** Alkaptonuric Ochronosis – A Review of 8 Cases *S. Kashyap, M. Lal, Indira Gandhi Medical College and Associated Hospitals, India* **S-24** A Novelty in Design of Custom-Made Femoral Components Using CT Data and CAD Techniques *S. Rahmati[1], F.Abbaszadeh[*2], F.Farahmand[3], [1,2]Islamic Azad University, Iran[3] Sharif University of technology, Iran*
18.00-19.00	**BUFFET DINNER AND CLOSING REMARKS BY PROF. IBRAHIM ESAT (Open to all participants) - HAMILTON HOSPITALITY CENTRE- NEWTOON ROOM- ZONE C**				

CAMPUS MAP



ACCOMMODATION

Zone A

1 **Isambard Complex** A – Q
2 **Galbraith Hall**
3 **Fleming Hall**
4 **Mill Hall**

Zone E

Lancaster Complex
13 Borough Road Hall
14 Maria Grey Hall
15 Lancaster Hall
16 Southwark Hall
17 Stockwell

Zone F

5 **Saltash Hall**
6 **Chepstow Hall**
7 **Clifton Hall**

Bishop Complex
8 Bishop Hall
9 Kilmorey Hall
10 Lacy Hall
11 St Margarets Hall

12 **Faraday Complex**

Lancaster Complex
18 Gordon Hall

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Chadwick
Gaskell
Health Economics Research Group
School of Arts (taught programmes)
Marie Jahoda
Brunel Law School
School of Social Sciences (UG, PG and research offices)
Meeting House

Zone B

Arts Centre
Bragg
Experimental Techniques Centre
Brunel University Press

Halsbury
Graduate School
Institute for the Environment
School of Sport and Education
Wolfson Centre
Heinz Wolff
Biosciences (enquiries)
Brunel Institute for Bioengineering
School of Sport and Education
John Crank
Computer Centre
Mathematical Sciences (enquiries)

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Bannerman Centre
Assistive Technology Centre
Cash Office
Disability and Dyslexia Service
Job Shop
Library
Placement and Careers Centre
Student Centre
West London Assessment Centre
Hamilton Centre
Brunel Hospitality
Brunel Volunteers
Campus Shops
Students' Union
Lecture Centre
Conference Office
Media Services

Recital (Roberts) Room
APDU
Michael Sterling
Brunel Business School (taught programmes)
Research Support and Development Office
School of Engineering and Design (PG taught and research programmes)
Wilfred Brown
Alumni
Beldam Gallery
Estates (Operations and Resources)
Finance
Marketing
Registry/Admissions
Security

Zone D

Antonin Artaud
Howell
Howell Theatre (Howell Centre)
Joseph Lowe
Distribution Centre Maintenance
Medical Centre
Tower A
Brunel Centre for Advanced Solidification Technology
Design Exhibition Centre
School of Engineering and Design (UG taught programmes)
Tower B
BITLab
Tower C and D

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Information Systems and Computing (enquiries)
Indoor Athletics Centre
Lancaster Conference Suite
Sports Centre

Zone F

Accommodation Office
Counselling Service
Housing Office

Zone G

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Elliott Jaques
Brunel Business School (taught programmes)
Gardiner
CLEAPSS
Russell
Brunel International (including LIBT)
International Pathways and Language Centre
MBA

Sports Park

Athletics Arena
Netball Courts
Sports Pavilion
Synthetic Pitches
Tennis Courts

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MJM
MUSCULOSKELETAL JOINT MODELLER

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